



A Strategic Roadmap for Oracle to Postgres Migration at Ooredoo with EDB

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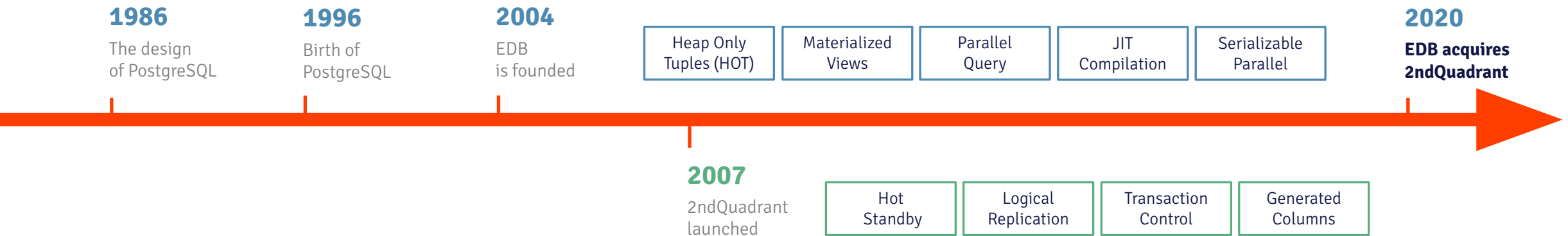
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What is PostgreSQL?

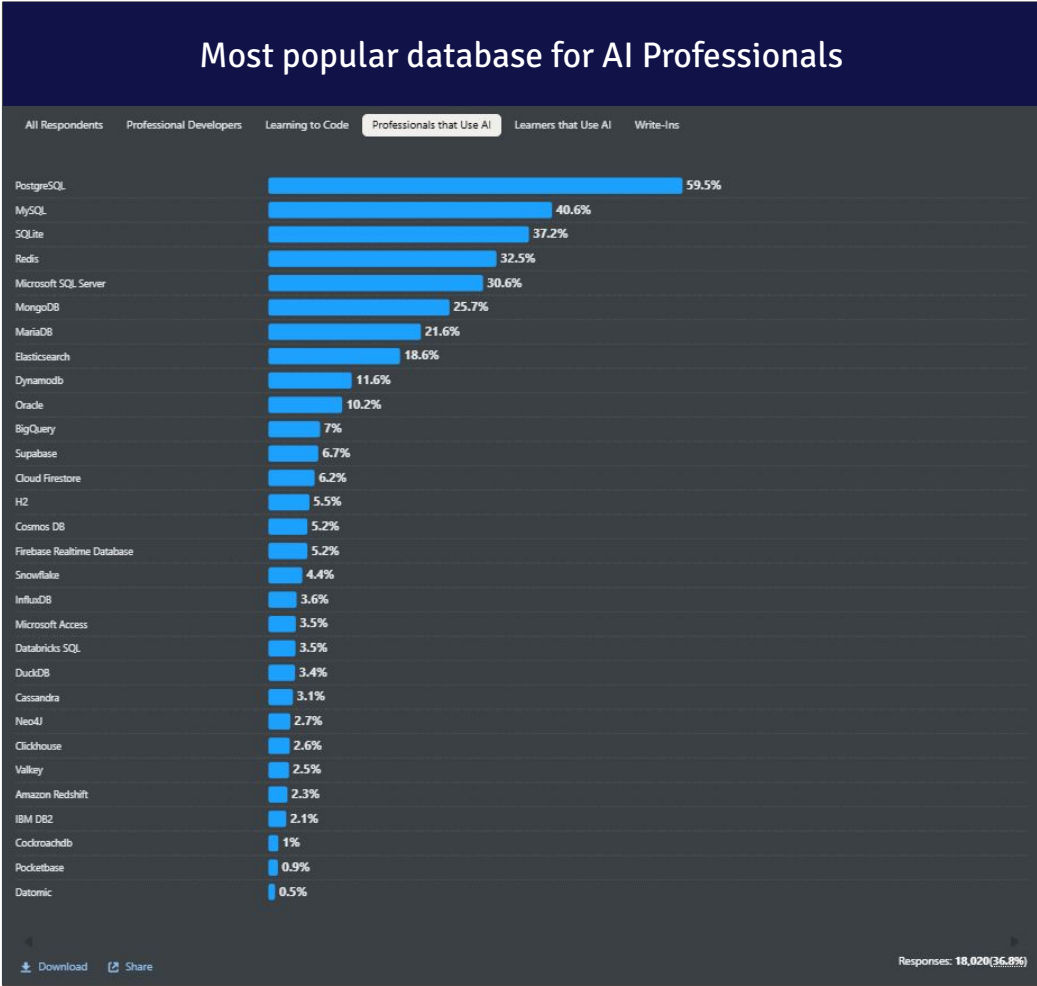
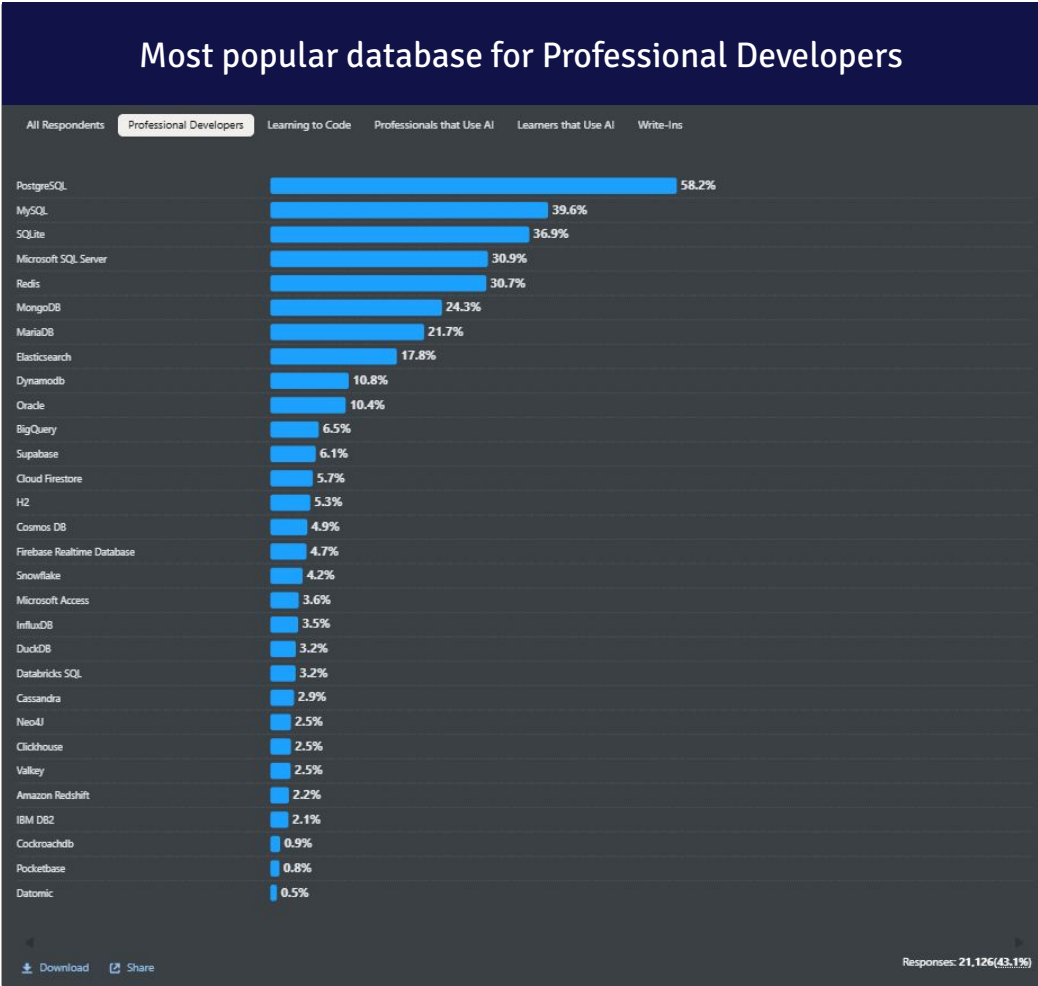


What is Postgres?

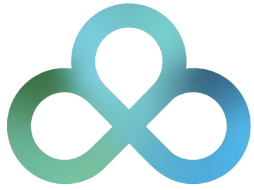
PostgreSQL is an open-source, enterprise-grade relational database system known for reliability, scalability, and advanced features. It supports powerful SQL queries, complex data types, and extensibility for modern applications.



How Postgres is Winning?



Source: Stack Overflow Developer Survey, 2025



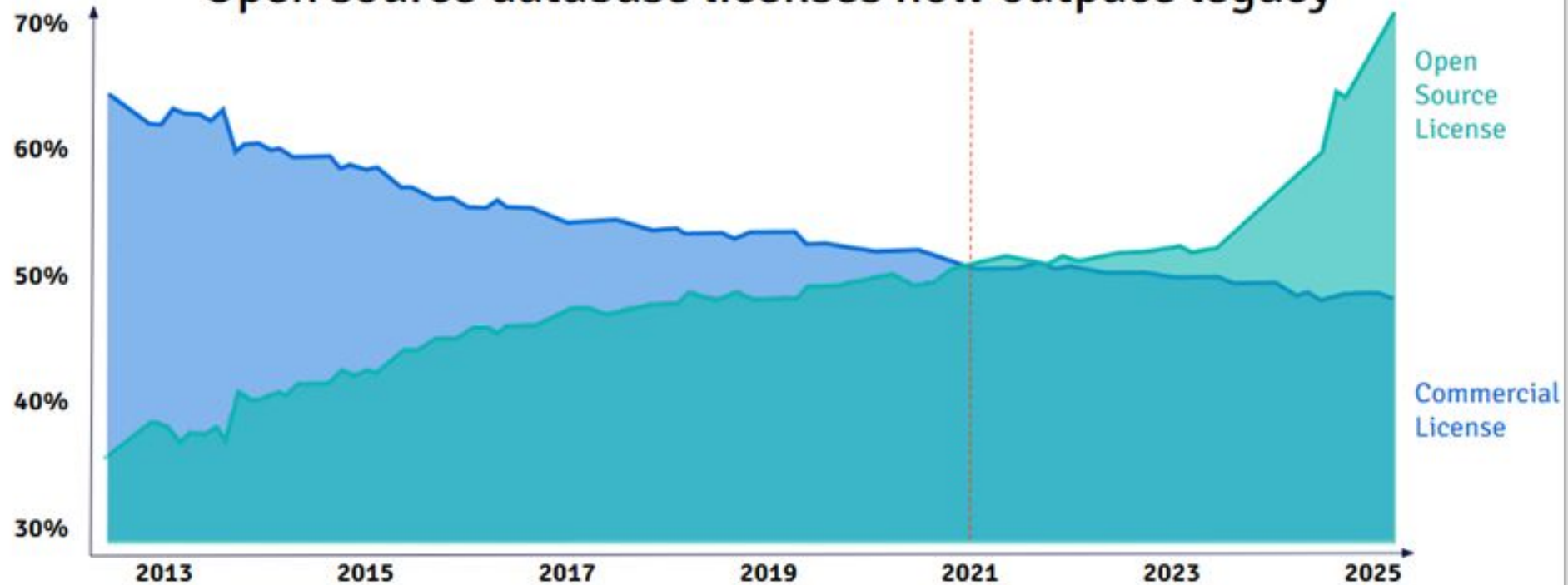
EDB

Postgres for the AI Generation

A TIPPING POINT

source: db-engines, IDC

Open source database licenses now outpace legacy





MISSION

EDB will deliver the #1 Postgres generative data and AI platform for data-driven, AI-infused, intelligent applications with seamless support for database, data lake, data warehouse, and AI workloads.

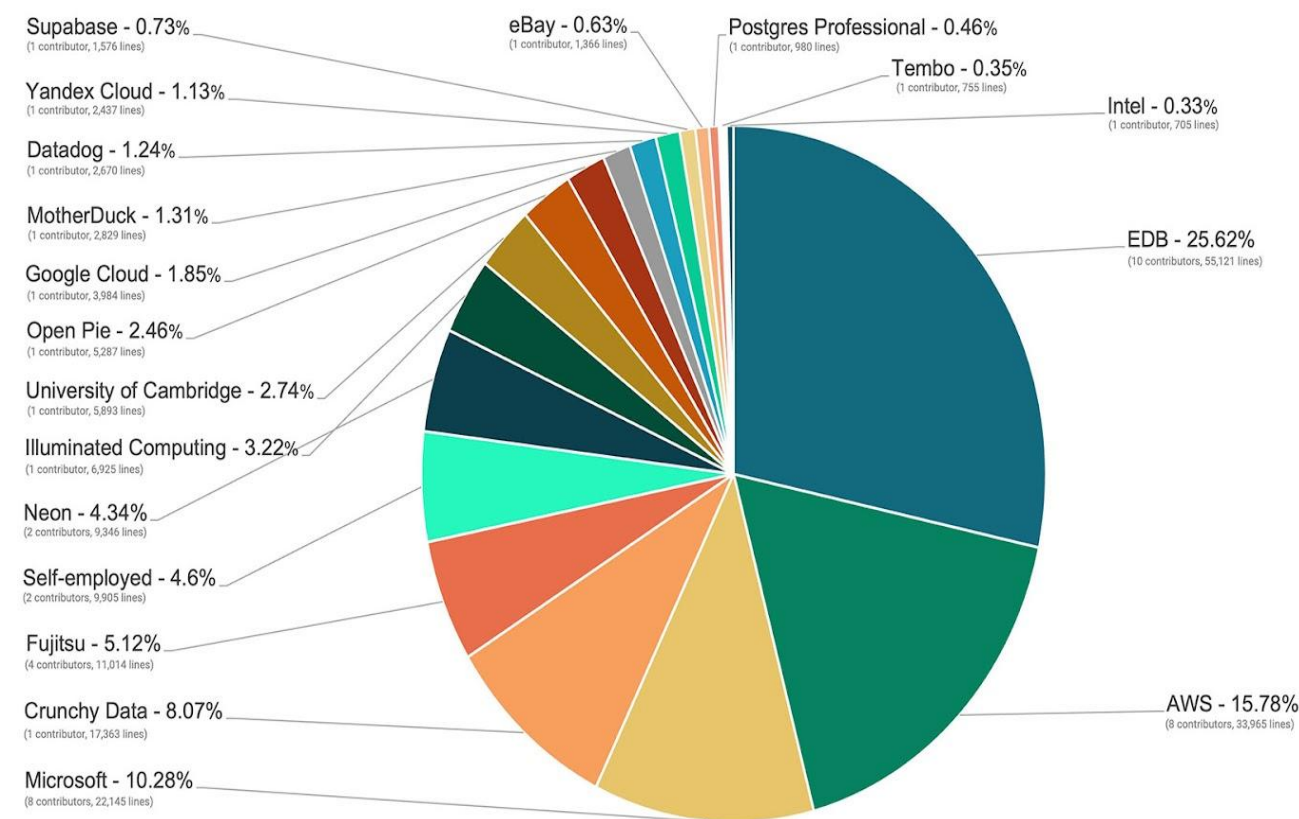
VISION

We envision an economy powered by data-driven, AI-infused intelligent applications that seamlessly integrate into daily life, driving both economic and social impact for good.

850+ employees
32 countries
#1 contributor to Postgres
20+ years of innovation

Companies that had the biggest impact on PostgreSQL development in 2024

The following companies, through their team members, contributed 90% of the new lines of code to Postgres 17



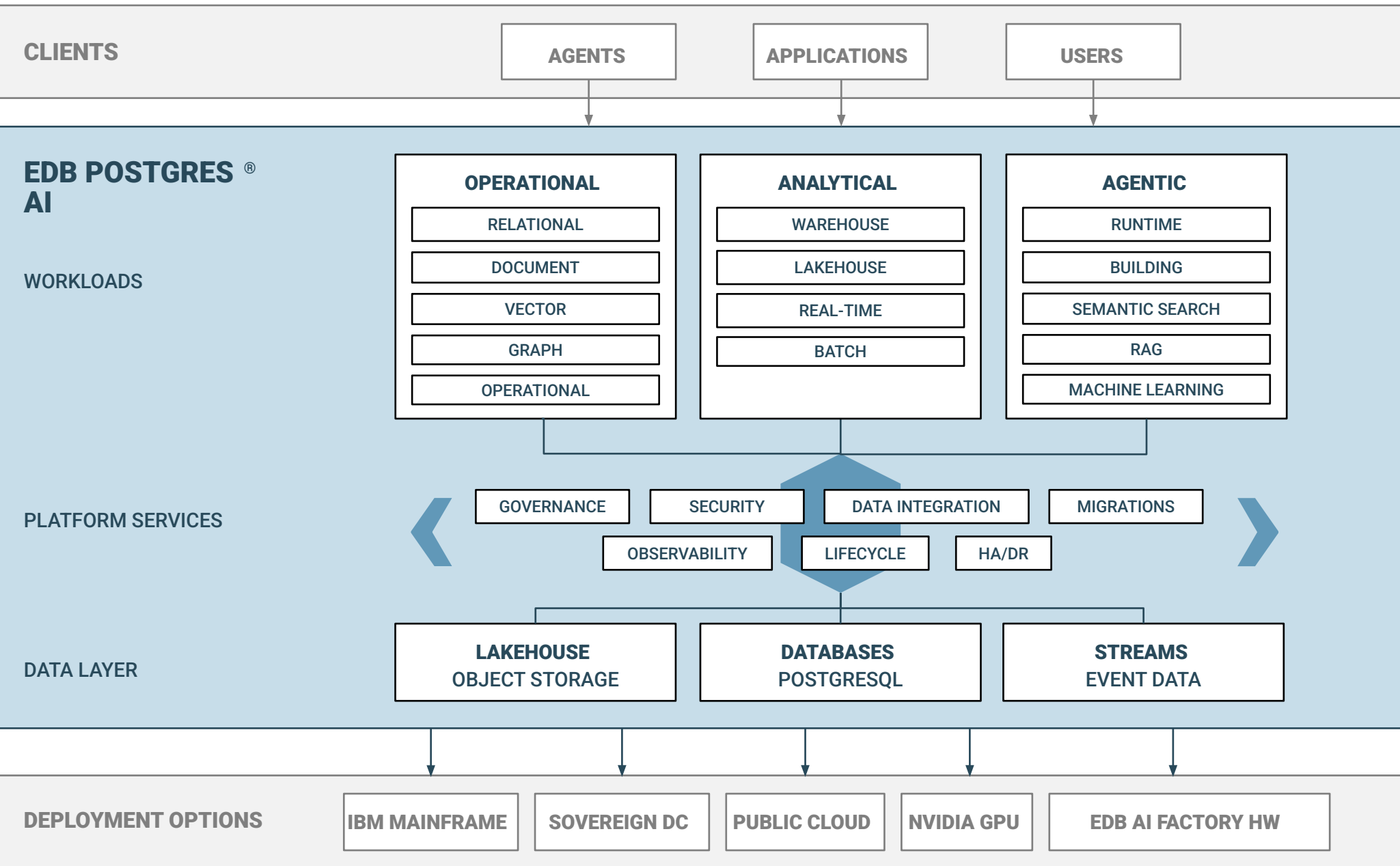
1,600+ Leading Enterprises With Complex, Compliant, And Scaling Data Needs Trust EDB



EDB Postgres AI

Industry first intelligent platform for transactional, analytical, and new AI workloads





EDB Postgres AI Database



EDB POSTGRES AI DATABASE

SINGLE DATABASE PLATFORM FOR ANY WORKLOAD, READY FOR SOVEREIGN AI.



Build without traditional boundaries



Deliver always-on experiences



Secure your data assets for sovereign AI



Boost productivity for busy teams

KEY FEATURES

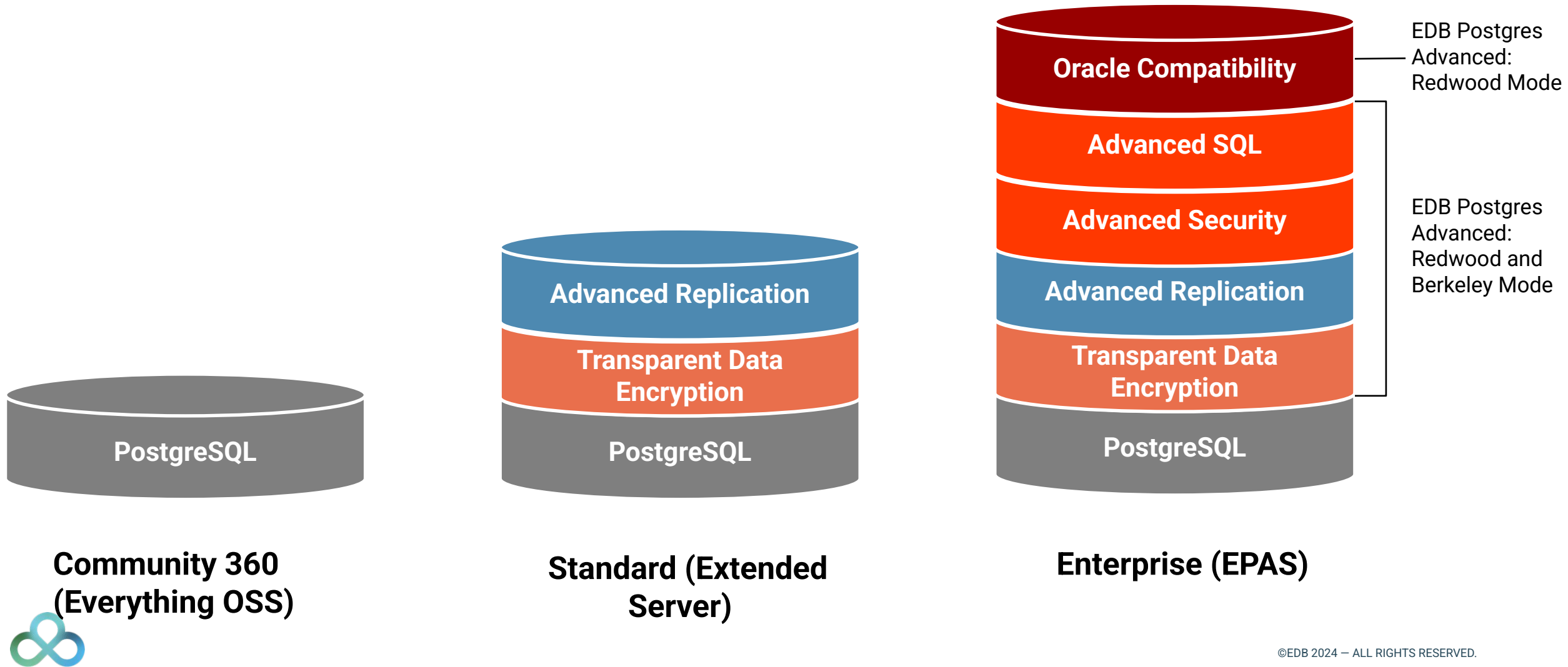


- **Multi-model database:** Relational, document, time series, columnar, vector, and more.
- **Distributed HA:** 99.999% HA, built on a geo-distributed, active-active architecture.
- **Secure by default:** Transparent Data Encryption and data, database, and app protection eliminate threats.
- **Flexible deployment:** Automate management across hybrid and multi-cloud environments.



Subscription plans

EDB offers 3 horizontal subscription plans and 1 vertical plan



SLO Support Terms

<https://www.enterprisedb.com/SLO/accept20210816-1>

		Subscription Plan		
		Premium	Production	Basic
Availability:		24 hours x 7 days	24 hours x 7 days	8am - 6pm / Mon - Fri
Initial Response Service Level Objective	Severity-1	15 minutes	30 minutes	N/A
	Severity-2	30 minutes	60 minutes	N/A
	Severity-3	60 minutes	2 hours	4 hours
	Severity-4	1 business day	1 business day	1 business day
Remedy Service Level Objective	Severity-1	4 hours	24 hours	N/A
	Severity-2	8 hours	48 hours	N/A
	Severity-3	10 business days	15 business days	20 business days
	Severity-4	30 business days	45 business days	60 business days
Resolution Service Level Objective	Severity-1	24 hours	N/A	N/A
	Severity-2	5 days	N/A	N/A

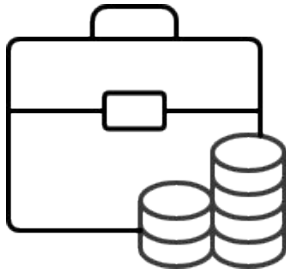


Oracle to EDB Postgres

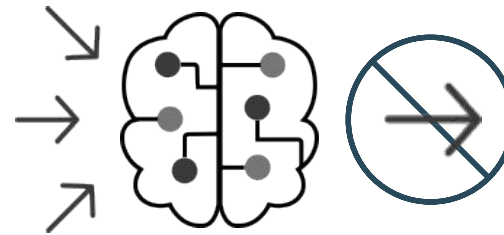


Challenges with Legacy Oracle Infrastructure

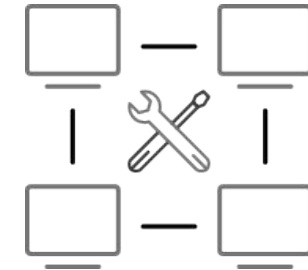
Legacy data infrastructure can't keep up in an AI era.



- High TCO trap
 - Compulsory support contracts and specialized personnel inflate budgets and strain resources.



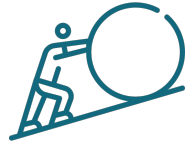
- Innovation bottlenecks
 - Ceilings for the app stack.
 - Lack of future orientation hampers adoption of modern cloud, analytics, and AI tech.



- Extensive application refactoring
 - Many Oracle migration tools lack interoperability and require significant app refactoring.



What obstacles exists?



Migrations are hard

- Much assessment and effort required
- Across schema, data, and application



Oracle skills

- Businesses have invested Oracle training
- Concern of losing those skills/expertise



Troublesome contracts

- Oracle licenses are complicated
- And audits are disruptive

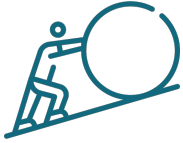


Apps designed for Oracle

- Oracle-specifics ingrained in the app
- Difficult to migrate one without the other



What factors should be considered when migrating?



Schemas

- Objects and code
- Mapping data types
- Handling syntax differences
- Raising incompatibilities



Data

- Methodology: Bulk; ongoing, fallback
- Tools: ETL, validation



Infrastructure

- Hosting (cloud, on-prem, DBaaS)
- Deployment (VM, K8s)
- DBMS optimisation
- HA Requirements
- Security and Encryption



Application

- Code
- Languages
- Connectors
- Syntax
- Performance
- Optimization
- Indexing





Legacy Application Database Migration Journey

What are the steps in moving to a new database?

Analyze feasibility and alternatives

- Review of app portfolio
- Align migration with IT strategy
- Cloud vs. on-prem
- Open source vs. proprietary

Migrate DB schema, code, and data

- Move schema
- Migrate DB functionality
- Migrate data as snapshot and/ or CDC

Migrate reports and management tools

- Migrate reports
- DBA utilities and scripts

Optimize and configure post migration system

- Database tuning
- Query tuning
- Application tuning
- Address HA, DR, security, authentication/ authorization reqs

Complete cutover

- Completion of CDC
- Rollback setup
- Go/No-Go
- Production cutover

Test migration

- Data validation
- Functional validation
- Performance validation

Migrate interfaces and application

- Migrate APIs (JDBC, ODBC, OCI, .NET,...)
- Convert embedded application SQL
- Migrate applications

Plan migration

- Prioritize applications
- Lift & shift, replatforming or restructuring?
- Define non-functional requirements
- High-level solution design
- Estimate efforts

Decide to migrate

- Business case
- Organizational alignment

Break Free from Oracle with EDB Postgres AI

Run to your future faster and thrive in an open source world with your data where, when, and how you need it.



- Zero-risk migration

- Migrate schema and data from Oracle in 20 days or less.
- Minimized downtime and disruption.



- Less assembly required

- Reduce app rewriting by up to 80%.
- No disturbance to teams or business and data continuity.



- Cloud modernization and agility

- High availability across any clouds, all in one platform.
- Freedom to explore new data projects.



- Transparent TCO

- Save up to 80% total cost of operations (TCO) vs. Oracle licensing fees.



Key Features



- Oracle compatibility mode
 - Replicates Oracle functionality in Postgres, covering SQL syntax, data types, stored procedures, etc.



- Instant error resolution with AI-driven copilot
 - Tackle migration challenges with an AI chat tool to help answer migration errors like command line and schema issues.



- Migration toolkit and portal
 - Command line tool for migrating Oracle objects and data.
 - Portal to analyze and convert Oracle schema and produce compatible DDL statements.



- EDB Postgres Distributed
 - 99.999% availability in geo-distributed clusters and across multi-cloud environments.



- Postgres security and compliance
 - Transparent Data Encryption, audit trail, privilege analysis, and firewall.
 - SOC2, GDPR, and PCI DSS.



- Postgres performance
 - Wait States, SQL Profiler, and Index advisor.
 - 5X throughput efficiency.



Database Compatibility Support

SQL extension support
Decode, NVL, Substr, NVL2, Date/time functions
DDL syntax support

PL/SQL support – native language
REF Cursors, Implicit and explicit cursors
Looping, variable declarations, conditional statements
Collections: Associative Arrays, Varrays, Nested tables
Pragmas
Named parameters
User Defined Exceptions
Explicit Transaction Control (within sp)

Tools
EDB*Plus – SQL*Plus look-a-like
EDB*Loader – SQL*Loader equivalent

Oracle-like Data Dictionary
ALL_, DBA_, USER_ views

Wait Events
System and session waits
Statspack-like reporting

PL/SQL supplied packages
18 DBMS
7 UTL

Data types
Blobs, Clobs, XMLTYPE, VARCHAR2, NUMBER, CHAR, Integer
Drivers
JDBC, ODBC, .NET with Oracle extensions
OCI & ProC compatible drivers

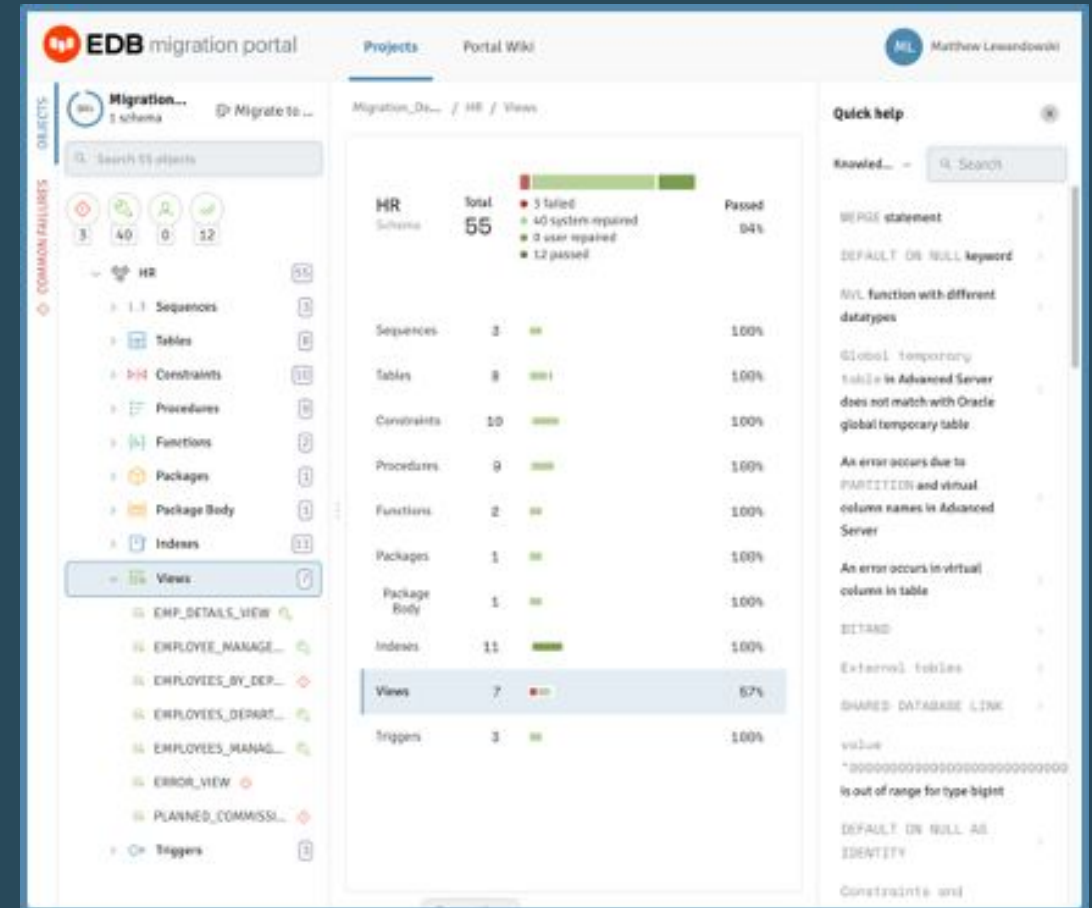
Features
Packages
Stored procedures
Functions
Triggers
Hints
Hierarchical Queries
Synonyms – Public and Private
Sequences
Rownum
Users/Roles
Dynamic SQL
Materialized Views
Partitioning



EDB Migration Portal

- Online assessment and migration of Oracle schemas
- Free to use without a subscription
- Leverages Compatibility with Oracle provided in EDB Postgres Advanced Server
 - Schemas
 - DB code
- Rich knowledge base from 15+ years of migrations
- Continuous release of new code translations

Migration Portal View Example



EDB Migration Toolkit

- Installable java command line based application used for snapshot type data migrations
 - Online or Offline Modes
 - Other options for granular control of migration process and improved performance
- Requires an EDB subscription to use
- Also supports other migration use cases
 - Schema migration
 - Other source and target combinations besides Oracle to EPAS

Migration Toolkit Example

```
(enterprisedb@localhost ~) $ /usr/edb/migrationtoolkit/bin/runMTK.sh -dataOnly -truncLoad HR
Running EnterpriseDB Migration Toolkit (Build 55.1.0) ...
Source database connectivity info...
conn =jdbc:oracle:thin:@//172.17.0.2:1521/XEPDB1
user =hr
password=*****
Target database connectivity info...
conn =jdbc:edb://p-c55npcdeig447p56luhg.dqrgadbpjqv8pwzl.edbcloud.io:5432/hrplusapp?ssl=require
user =hrplus_admin
password=*****
Connecting with source Oracle database server...
Connected to Oracle, version 'Oracle Database 18c Express Edition Release 18.0.0.0.0 - Production
Version 18.4.0.0.0'
Connecting with target EDB Postgres database server...
Connected to EnterpriseDB, version '13.5.9 (Debian 13.5.9-1+deb10)'
Importing redwood schema HR...
Initializing Data Loader 1...
Loading Table Data in 8 MB batches...

...

Data Load Summary: Total Time (sec): 8.788 Total Rows: 215 Total Size(KB): 12.485
Schema HR imported successfully.

Migration process completed successfully.
Total Elapsed Migration Time (sec): 13.911

Migration logs have been saved to /var/lib/edb/.enterprisedb/migration-toolkit/logs

***** Migration Summary *****
Tables: 8 out of 8

Total objects: 8
Successful count: 8
Failed count: 0
Invalid count: 0

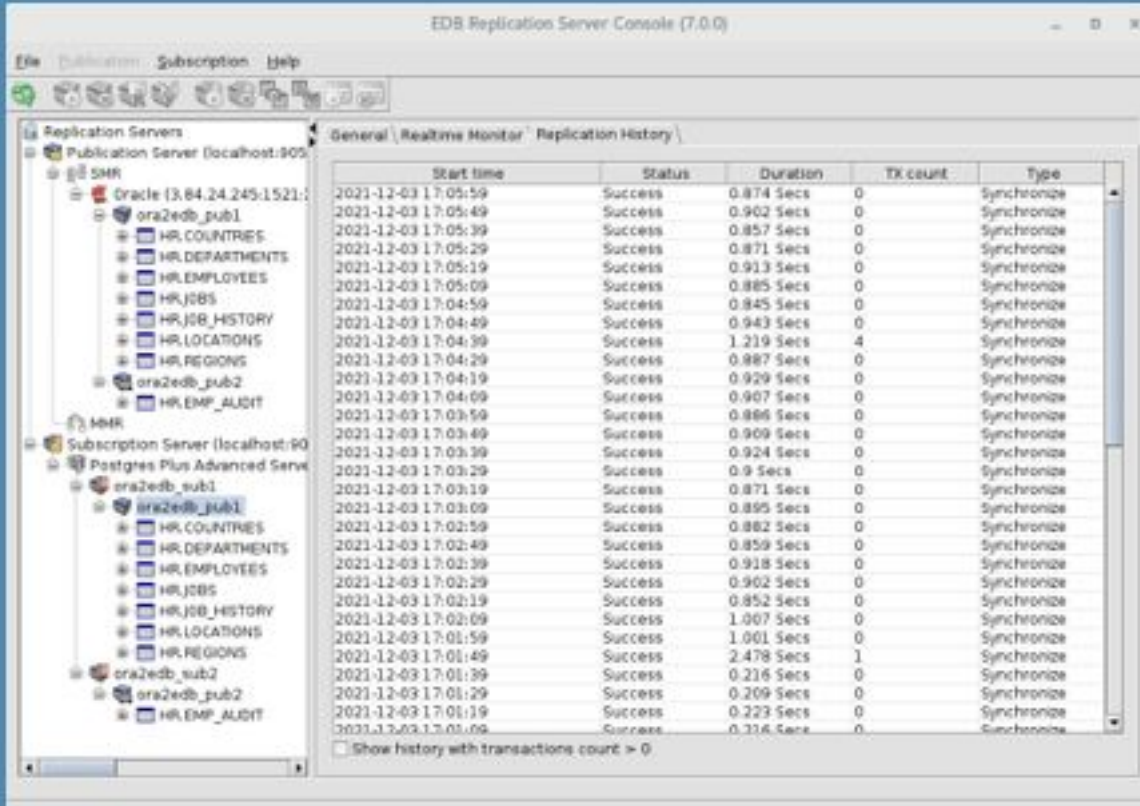
*****
(enterprisedb@localhost ~) $
```



EDB Replication Server

- Installable java application used for performing continuous CDC based data migrations to support minimal downtime
 - CLI and GUI options
 - On-demand or scheduled continuous replication
 - Snapshot or synchronous replication
- Requires an EDB subscription to use
- Supports Postgres to Oracle replication to support a migration fallback use case
- Also supports other replication use cases

Replication Server Example



EDB Replication Server Console (7.0.0)

File Publication Subscription Help

Replication Servers

- Publication Server (localhost:905)
 - SMR
 - Oracle (3.84.24.245:1521)
 - ora2edb_pub1
 - HR.COUNTRIES
 - HR.DEPARTMENTS
 - HR.EMPLOYEES
 - HR.JOBS
 - HR.JOB_HISTORY
 - HR.LOCATIONS
 - HR.REGION
 - ora2edb_pub2
 - HR.EMP_AUDIT
- Subscription Server (localhost:90)
 - Postgres Plus Advanced Server
 - ora2edb_sub1
 - HR.COUNTRIES
 - HR.DEPARTMENTS
 - HR.EMPLOYEES
 - HR.JOBS
 - HR.JOB_HISTORY
 - HR.LOCATIONS
 - HR.REGION
 - ora2edb_sub2
 - HR.EMP_AUDIT

General Realtime Monitor Replication History

Start time	Status	Duration	TX count	Type
2021-12-03 17:05:59	Success	0.874 Secs	0	Synchronize
2021-12-03 17:05:49	Success	0.902 Secs	0	Synchronize
2021-12-03 17:05:39	Success	0.857 Secs	0	Synchronize
2021-12-03 17:05:29	Success	0.871 Secs	0	Synchronize
2021-12-03 17:05:19	Success	0.913 Secs	0	Synchronize
2021-12-03 17:05:09	Success	0.885 Secs	0	Synchronize
2021-12-03 17:04:59	Success	0.845 Secs	0	Synchronize
2021-12-03 17:04:49	Success	0.943 Secs	0	Synchronize
2021-12-03 17:04:39	Success	1.219 Secs	4	Synchronize
2021-12-03 17:04:29	Success	0.887 Secs	0	Synchronize
2021-12-03 17:04:19	Success	0.929 Secs	0	Synchronize
2021-12-03 17:04:09	Success	0.907 Secs	0	Synchronize
2021-12-03 17:03:59	Success	0.886 Secs	0	Synchronize
2021-12-03 17:03:49	Success	0.909 Secs	0	Synchronize
2021-12-03 17:03:39	Success	0.924 Secs	0	Synchronize
2021-12-03 17:03:29	Success	0.9 Secs	0	Synchronize
2021-12-03 17:03:19	Success	0.871 Secs	0	Synchronize
2021-12-03 17:03:09	Success	0.895 Secs	0	Synchronize
2021-12-03 17:02:59	Success	0.882 Secs	0	Synchronize
2021-12-03 17:02:49	Success	0.859 Secs	0	Synchronize
2021-12-03 17:02:39	Success	0.918 Secs	0	Synchronize
2021-12-03 17:02:29	Success	0.902 Secs	0	Synchronize
2021-12-03 17:02:19	Success	0.852 Secs	0	Synchronize
2021-12-03 17:02:09	Success	1.007 Secs	0	Synchronize
2021-12-03 17:01:59	Success	1.001 Secs	0	Synchronize
2021-12-03 17:01:49	Success	2.478 Secs	1	Synchronize
2021-12-03 17:01:39	Success	0.216 Secs	0	Synchronize
2021-12-03 17:01:29	Success	0.209 Secs	0	Synchronize
2021-12-03 17:01:19	Success	0.223 Secs	0	Synchronize
2021-12-03 17:01:09	Success	0.216 Secs	0	Synchronize

Show history with transactions count > 0

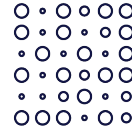


EDB Tooling



Management/Monitoring

Postgres Enterprise Manager
pgAdmin



High Availability

EDB Postgres Distributed
Failover Manager
Repmgr
Patroni



Backup and Recovery

Barman
pgBackRest



Migration

Migration Portal
Migration Toolkit
Replication Server



Integration

Connectors
Foreign Data Wrappers
Connection Pools



Kubernetes

EDB Postgres for Kubernetes
CloudNativePG



Free On-Demand Courses

EDB Postgres AI (EDB PG AI) and open source courses are available anytime on our online learning platform. Use your EDB web login to access the Training Portal.

- Free
- Convenient – Take anytime
- Self-paced
- Interactive
- Flexible – Learn anywhere

EDB Postgres for Oracle DBAs

Are you an Oracle DBA who wants to quickly learn Postgres? You will learn the fundamental concepts of EDB Postgres Advanced Server including system architecture and configuration, a detailed comparison of various Postgres features to Oracle, and migration of Oracle Objects to Postgres. You will also learn the key differences with EDB Postgres and apply your existing knowledge to manage EDB Postgres database systems for the Enterprise.



Migration Assessment Demo



A person stands in a field of tall grass, looking up at a large, stylized, three-lobed logo in the sky. The logo is composed of three interlocking loops, each a different shade of blue and green. The background is a sunset sky with soft, wispy clouds in shades of orange, pink, and blue. The person is wearing a dark jacket and pants, and their hands are in their pockets.

Thank you!

